



COMPLETE LISTING OF CLAIMS

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1. (Currently Amended) A composite material heat controller for an object, the composite material heat controller comprising:

~~a composite material comprising:~~

a base material that radiates radiating a large larger amount of heat at a high-temperature relative to that of the heat radiated at a low-temperature, the base material having a surface adapted to thermally contact a surface of said object phase; and

a phase-change substance overlying said base material having insulation properties at a the high-temperature phase, metallic properties at a the low-temperature phase, radiating a large larger amount of heat at a the high-temperature phase relative to a smaller , radiating a small amount of heat radiated at a the low-temperature phase, and having a high reflectivity in the thermal infrared light region at a the low-temperature phase.

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2. (Currently Amended) A The composite material heat controller according to claim 1, wherein said phase-change substance comprises a thickness in the range from about one to about thirty microns.

3. (Currently Amended) A The composite material heat controller according to claim 1, wherein said base material comprises a thickness greater than a thickness of said phase-change substance.

4. (Currently Amended) A The composite material heat controller according to claim 1, wherein said phase-change substance is a perovskite oxide.

5. (Currently Amended) A The composite material heat controller according to claim 4, wherein said phase-change substance 1 is perovskite Mn oxide.

6. (Currently Amended) A The composite material heat controller according to claim 1, wherein said base material comprises a thickness in the range from 10 to 100 μm .

7. (Currently Amended) A The composite material heat controller according to claim 1, wherein said base material is selected from a group consisting of silicone, alumina, and partially stabilized-zirconia.

8. (Currently Amended) A The composite material heat controller according to claim 1, wherein a reflective plate or reflective film each having reflectivity with respect to visible light is laminated onto said phase-change substance on a side opposite from a side on which said base material is laminated.

9. (Currently Amended) A The composite material heat controller according to claim 1, wherein said surface of said base material of said composite material heat controller is affixed to a the surface of an the object which generating heat, either directly or via an intervening heat-conductive substance.

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10. (Currently Amended) A The composite material heat controller according to claim 9, wherein said composite material heat controller is thermally joined to said object, via an appropriate intervening adhesive.

11. (Currently Amended) A The composite material heat controller according to claim 1, wherein said object comprises a non-flat surface.

12. (Currently Amended) A The composite material heat controller according to claim 1, wherein said object includes an electronic circuit used in a space vehicle, including a man-made satellite and a spaceship.

13. (Currently Amended) A method for controlling heat in an object comprising:

~~providing a composite material on said object, said composite material formed of a base material that radiates radiating a large larger amount of heat at a high-temperature relative to that of the heat radiated at a low-temperature, the base material having at least a first surface and a second surface phase; and~~

~~providing attaching a phase-change substance on said first surface of said base material, said phase-changing substance having insulation properties at a the high-temperature phase, metallic properties at a the low-temperature phase, radiating a large larger amount of heat at a the high-temperature phase relative to a smaller , radiating a small amount of heat radiated at a the low-temperature phase, and having a high reflectivity in the thermal infrared region at the a low-temperature phase; and~~

~~attaching said second surface of said base material to said object.~~

14. (Currently Amended) A The method for controlling heat according to claim 13, wherein said base material comprises a thickness greater than a thickness of said phase-change substance.

15. (Currently Amended) A The method for controlling heat according to claim 13, wherein said phase-change substance is a perovskite oxide.

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16. (Currently Amended) A The method for controlling heat according to claim 15, wherein said phase-change substance is perovskite Mn oxide.

17. (Currently Amended) A The method for controlling heat according to claim 13, wherein said base material is selected from a group consisting of silicone, alumina and partially stabilized-zirconia.

18. (Currently Amended) A The method for controlling heat according to claim 13, wherein either one of a reflective plate and a reflective film having reflectivity with respect to visible light is laminated onto said phase-change substance on a side opposite from a side ~~on which~~ attached to said first surface of said base material is laminated.

19. (Currently Amended) ~~A~~ The method for controlling heat according to claim 13, wherein said composite material is ~~affixed~~ attached to a surface of said object, either directly or via an intervening heat-conductive substance.

B 20. (Currently Amended) ~~A~~ The method for controlling heat according to claim 13, wherein said object includes an electronic circuit used in a space vehicle, including a man-made satellite and a spaceship.

